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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,725	02/20/2004	Allan H. Clauer	LSP-37	9473

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EXAMINER	
ELVE, MARIA ALEXANDRA	
ART UNIT	**PAPER NUMBER**
1725	

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/784,725	CLAUER ET AL.	
	Examiner	Art Unit	
	M. Alexandra Elve	1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 July 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 8-9 & 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Dulaney et al. (USPN 6,002,102).

Dulaney et al. discloses laser peening of hidden surface(s) on a workpiece. The term hidden surface is an interior surface of a workpiece, not normally available for direct line-of-sight laser processing. High power pulsed lasers are used, for example a ND-glass laser. The laser system includes a focusing mirror and lens. The reflected laser beam impacts the hidden surface and thus laser shocks the surface. Laser processing is simply a matter of applying laser energy at the correct angle to impact the intended portion of the hidden surface. Workpiece hidden surfaces encompass holes, blind bores; dovetail slots (turbine disks) and other types of openings. (abstract, figures, col. 1, lines 5-10, 60-67, col. 2, lines 1-12, col. 3, lines 59-67, col. 4, lines 8-67)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3-5, 7, 10-12, 16-18 & 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dulaney et al. ('102) as state in the above paragraph and further in view of Dulaney et al. (USPN 6,288,358).

Dulaney et al. ('102) does not teach a fiber optic laser delivery mechanism.

Dulaney et al. ('358) discloses a remote laser shock processing system, which delivers a beam of coherent energy. The system is used for workpieces that are hard to access. The laser beam is brought to the area of the workpiece, rather than manipulating the workpiece in the laser beam. Laser beam delivery means include fiber optics, a light pipe, an articulated arm with pivotable mirrors. The articulated arm consists of swivels or gimbals, which allow the arm to move in three dimensions. Contained within the arm are a plurality of mirrors and focusing lens. (abstract, figures, col. 1, lines 43-57, col. 2, lines 1-5, col. 6, lines 36-47)

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a fiber optic laser delivery system as taught by Dulaney et al. ('358) in the Dulaney et al. ('102) system because the system works for hard to access places, in this case a hidden surface that is not normally available for direct line-of-sight laser processing.

Claims 13-15 & 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dulaney et al. ('102) as state in the above paragraph and further in view of Friedman et al. (USPN 6,818,854).

Dulaney et al. ('102) does not teach a fiber optic laser delivery system, its parameters or the use of multiple laser units.

Friedman et al. discloses a laser peening system with fiber optic delivery. A fiber optic cable is used for transmitting the at least one laser pulse from the laser to the laser processing unit. Additionally, a multiplicity of individual lasers are used and the fiber optic cable system includes a corresponding multiplicity of individual optical fibers for transmitting the at least one laser pulse. A lens focuses the light onto the material with a peak flux and fluence capable of sending a shock wave through the material. Generally, high power lasers are used with fluxes of 1-10 GW/cm^2. Nd:YAG lasers with rates of 10-30 Hz and duration of 50-100 ns are used. (abstract, figures, col. 2, lines 20-30, 66-67, col. 4, lines 4-6, 53-55, col. 5, lines 29-30, 38-42, col. 6, lines 8-31)

It would have been obvious to one of ordinary skill in the art at the time of the invention to determined the laser parameters as taught by Friedman et al. in the Dulaney et al. ('102) system because these are merely standard parameters of laser peening system.

It would have been obvious to one of ordinary skill in the art at the time of the invention to multiple lasers as taught by Friedman et al. in the Dulaney et al. ('102)

system because this would enhance the efficiency of laser peening system by laser processing multiple times or sites.

Claims 6 & 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dulaney et al. ('102) and Dulaney et al. ('358) as state in the above paragraph and further in view of Dulaney et al. (USPN 6,566,629).

Dulaney et al. ('102) and Dulaney et al. ('358) do not teach of a prism.

Dulaney et al ('629) discloses a laser peening system for hidden surfaces, which have hidden surfaces (not line-of-sight accessible). The laser system uses prisms and other shapes for directing the laser beam to the hidden surface for laser peening. (abstract, figures. col. 1, lines 48-67, col. 9, lines 39-41, col. 10, lines 5-13)

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a prism in the laser peening system, as taught by Dulaney et al. ('629) in the Dulaney et al. ('102) and Dulaney et al. ('358) system because the prism ensures that the laser beam is completed focused in the hidden surfaces and hence optimizes the laser shock peening process.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See US PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Alexandra Elve whose telephone number is 571-272-1173. The examiner can normally be reached on 6:30-3:00 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on 571-272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

July 24, 2005.

M. Alexandra Elve
Primary Examiner 1725.